

TOP SECRET

ABSTRACT OF THE DISCLOSURE

A cartridge primer which utilizes an explosive that can be designed to become inactive in a predetermined period of time: a limited-life primer. The explosive or combustible material of the primer is an inorganic reactive multilayer (RML). The reaction products of the RML are sub-micron grains of non-corrosive inorganic compounds that would have no harmful effects on firearms or cartridge cases. Unlike use of primers containing lead components, primers utilizing RML's would not present a hazard to the environment. The sensitivity of an RML is determined by the physical structure and the stored interfacial energy. The sensitivity lowers with time due to a decrease in interfacial energy resulting from interdiffusion of the elemental layers. Time-dependent interdiffusion is predictable, thereby enabling the functional lifetime of an RML primer to be predetermined by the initial thickness and materials selection of the reacting layers.